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Route To:

Subject: Mormon Lake Basin Project Forest Health Project on the Mormon Lake RD

To: District Ranger, Mormon Lake and Peaks RD, Coconino NF

On September 5, 2007, I visited the Mormon Lake Ranger District, Coconino National Forest, at the request of Patricia Ringle to discuss and evaluate potential forest health projects within the larger Mormon Lake Basin Fuels Reduction project area on the District. I describe in this report what bark beetle activity was observed in this area, general existing stand conditions, and make recommendations to minimize future bark beetle impacts.

Mormon Lake Basin Forest Health Project

The Mormon Lake Basin project area is located in the wildland/urban interface (WUI) zone surrounding the community of Mormon Lake in Coconino County. The project area consists of a total of 2,831 acres, with 2,799 acres of ponderosa pine. The Mormon Lake RD is proposing to non-commercially hand thin a total 85 acres of ponderosa pine forest within this larger project area that includes mechanical thinning (2,316 acres) and prescribe burning (2,818 acres). All of the acres proposed for thinning are located within 2 miles of private property. The primary objectives for treating these 85 acres are to improve forest health, to improve stand and individual tree resilience and vigor, to reduce risk of catastrophic wildfire in urban areas, to improve Mexican spotted owl habitat, and to improve vegetative species diversity.

The proposed forest health project is located in Mexican spotted owl habitat; with 38 acres in a protected activity center (PAC) and 47 acres in restricted habitat. In addition, the area is located within 1 mile of private property. The proposed treatment will consist of thinning ponderosa pine up to 9 inches dbh. Total basal areas will be reduced to approximately 90 ft² per acre, with pine basal areas of approximately 65 ft² per acre and Gambel oak of approximately 25 ft² per acre. All slash will be piled by hand. The area will also receive a broadcast burn.

Patricia and I evaluated areas to be treated for bark beetle activity and general stand conditions. Stand densities within the proposed treatment areas are greater than 100 trees per acre and greater than 100 ft²/acre basal area.

Additionally, most stands contain some level of dwarf mistletoe infection, with several containing an average stand dwarf mistletoe rating (DMR) of 1.0 or greater. Recent research has



Figure 1. Ponderosa pine currently infested with western pine beetle within the Mormon Lake Basin Forest Health project area.



shown that bark beetles attacking ponderosa pine have a strong association with severity of dwarf mistletoe infection during drought conditions (Kenaley et al. 2006).

These areas have experienced moderate bark beetle-caused mortality over the past few years and are currently experiencing low to moderate bark beetle activity (**Figure 1**). Pines were currently being attacked by western pine beetle (*Dendroctonus brevicomis*) plus there were signs of previous pine mortality caused by pine engraver beetles (*Ips pini*). Many of these attacked trees had high levels of dwarf mistletoe infection.

The proposed project will increase both individual tree and stand health with residual trees being more resilient against attack from bark beetles and environmental stresses. Thinning around large yellow pines will reduce competition with smaller trees. The opening of tree canopies and the reduction of fuel ladders will reduce the risk of future crown fires.

Recommendations

The proposed project area for non-commercial thinning treatments will help to reduce the overall susceptibility of stands to bark beetle attack in the long term. In addition, by thinning ponderosa pine less than 9 inches dbh around clumps of Gambel oak, oak will grow larger at a fast rate, thus providing vital habitat components for the Mexican spotted owl. A more open canopy and reduced ladder fuels will result in a decreased risk of catastrophic crown fire. The proposed project area is already covered under signed NEPA documentation for the Mormon Lake Basin Fuels Reduction Project Environmental Assessment.

High stand density reduces both individual tree and stand vigor and therefore increases stand susceptibility to mortality from bark beetles. Over the past several years the Coconino National Forest has seen high levels of ponderosa pine mortality, particularly in the ponderosa/pinyon-juniper transition zones. Excess competition from smaller trees has also greatly increased the mortality risk of scattered large yellow pine. Also, continuous interlocking crowns and well-developed fuels ladders leaves vegetation on these sites at a high risk of loss from catastrophic wildfire.

Thinning from below has been experimentally demonstrated to increase the resistance level of the residual mature pine overstory (Feeney, et al., 1998). Thinning slash may pose a short-term risk to residual trees in the thinning units or surrounding areas depending on the timing of thinning, local population of pine engraver beetles, and site and environmental factors such as site quality and precipitation. Careful monitoring of beetle populations associated with these thinning projects should be implemented. Parker (1991) provides guidelines for minimizing pine engraver beetle impacts associated with thinning treatments, such as thinning during periods of bark beetle flight inactivity.

Requests for Forest Health Protection prevention/suppression funds should be submitted no later than October 12, 2007.

If you have any questions regarding my assessment of current bark beetle activity within the proposed project areas or my recommendations, please call me at (928) 556-2074.

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References Cited

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